

**Three new species of *Sarcomelicope* (Rutaceae)
from New Caledonia (with a new key
to the species of the genus)**

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Summary : Three new species of New Caledonian *Rutaceae* (*Sarcomelicope follicularis*, *S. pembaiensis*, and *S. megistophylla*) are described and a new key to the species of *Sarcomelicope* is proposed.

Résumé : Trois nouvelles Rutacées néocalédoniennes (*Sarcomelicope follicularis*, *S. pembaiensis* et *S. megistophylla*) sont décrites et une nouvelle clé des espèces de *Sarcomelicope* est proposée.

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Since I revised *Sarcomelicope* Engler (HARTLEY, 1982), three new species of that genus have come to my notice. One is a plant that I have long been aware of but have only recently realized is best included in *Sarcomelicope*. The other two, as far as I know, were first collected about two years ago. Descriptions of these plants are given below with notes on their distribution, ecology, and relationships to other species. Also provided are some necessary changes in the description of *Sarcomelicope* and a new key to the species.

***Sarcomelicope follicularis* T. Hartley, sp. nov.**

Arbor parva usque 8 m alta vel frutex ; ramulis novellis glabris, saepe plus minusve glaucis ; gemma terminali praeter pilos apicales cespitosos caducos glabra ; foliis oppositis et verticillatis (in quoque nodo 3 vel 4), 3.5-11.6 cm longis ; petiolo glabro, interdum plus minusve glauco, 0.8-4.5 cm longo, basi laminae articulato ; lamina subcoriacea vel coriacea, glabra, obovata vel interdum elliptica vel oblanceolata, 2.5-7 cm longa, 1-4 cm lata, basi cuneata vel subattenuata, venis primariis utrinsecus costa 9-12, venulis prominentibus subtiliter reticulatis, areolis pro parte maxima ca. 0.2-0.5 mm latis, apice obtuse brevi-acuminata vel obtusa (vel rotundata), plerumque retusa ; inflorescentiis pauci- vel plurifloris, 2-5 cm longis, axe, ramis, et pedicellis glabris, pedicellis 3-5 mm longis, in fructu 4.5-7 mm longis ; floribus ♂ et ♀ ca. 3.5 mm longis ; sepalis et petalis glabris, in fructu subpersistentibus ; staminibus filamentis ciliatis, in fructu subpersistentibus ; disco glabro, gynoecio glabro, carpellis distinctis, plus minusve contiguis ; fructibus albis, glabris ; carpellis evolutis 1-4, distinctis, divergentibus, manifeste suturalibus et in exsiccatis interdum dehiscentibus, ovoideis vel ellipsoideis, ad medium saepe aliquantum constrictis, 0.5-0.7 cm longis, pericarpio in sicco ca. 0.2 mm crasso, exocarpio carnosomembranaceo, mesocarpio chartaceo, endocarpio tenuiter cartilagineo ; seminibus 3-4 mm longis ; testa ca. 0.5 mm crassa.

TYPE : MacKee 27383, Nouvelle-Calédonie, Pouébo, crête entre Mandjélia et Col de Tiébo, 750 m, fr., 19.9.1973 (holo-, P!).

Shrub or small tree to 8 m high ; young branchlets glabrous, often more or less glaucous ; terminal bud glabrous except for a tuft of caducous hairs at the apex of each of the young leaves. Leaves opposite and in whorls of three or four, 3.5-11.6 cm long ; petiole glabrous, sometimes more or less glaucous, 0.8-4.5 cm long, articulated with the blade ; blade subcoriaceous to coriaceous, glabrous, obovate or sometimes elliptic or oblanceolate, 2.5-7 cm long, 1-4 cm wide, the base cuneate to subattenuate, the main veins 9-12 on each side of the midrib, the veinlets prominent, finely reticulate, the areolae mostly about 0.2-0.5 mm wide, the apex obtusely short-acuminate to obtuse (or rounded), usually retuse. Inflorescences few- to several-flowered, 2-5 cm long, the axis, branches, and pedicels glabrous, the pedicels 3-5 mm long. Staminate and carpellate flowers about 3.5 mm long ; sepals and petals glabrous, subpersistent in fruit ; staminal filaments ciliate, subpersistent in fruit ; disc glabrous ; gynoecium glabrous, the carpels distinct, more or less contiguous. Fruits white, glabrous ; developed carpels 1-4, distinct, divergent, manifestly sutural and sometimes dehiscent in dried specimens, ovoid to ellipsoid, often somewhat constricted at the middle, 0.5-0.7 cm long, the pericarp drying about 0.2 mm thick with fleshy-membranaceous exocarp, chartaceous mesocarp, and thin-cartilaginous endocarp. Seeds 3-4 mm long ; testa about 0.5 mm thick. — Pl. 1, 1, 2.

DISTRIBUTION : Northeastern part of the island from the civinity of Mandjélia southeast to Mt Grandié. — Map 1.

ECOLOGY : Recorded from rain forest and maquis ; on schistose and serpentine soils ; 600-1000 m alt.

In having apocarpous, thin-walled fruits closely resembling the follicular fruits of the rutaceous genus *Melicope* J. R. & G. Forster (proposed as the ancestor of *Sarcomelicope* in the revision, HARTLEY, 1982 : 361, 362), *Sarcomelicope follicularis* is the most exceptional, and by far the most primitive, species of the genus.

Until recently I interpreted the fruits of this plant as being naturally dehiscent and thus thought it was generically distinct from *Sarcomelicope*. It is now evident that the fruits are fleshy when fresh (collectors have described them as being white when fully mature and when dried fruits are heated in water the outer pericarp becomes fleshy) and that the dehiscence, which can be observed in all but one of the fruiting collections cited below, results from pressing and drying and is not a natural occurrence (only a few carpels have dehisced in each collection and they are invariably ones that have become detached).

The closest relative of *Sarcomelicope follicularis* is *S. argyrophylla* Guillaumin. The relationship is not close but it is significant that these two species are unique in the genus in having terminal buds which are glabrous except for a tuft of caducous hairs at the apex of each of the young leaves.

MATERIAL STUDIED : MacKee 14765, crête ouest de la Roche Ouaième, 650 m, fl. ♂, 19.4.1966, P! ; 18816, Mt Grandié (haute Amoa), 900-960 m, fl. ♀ and fr., 14.5.1968, P! ; 21624, Pouébo, crête entre Mandjélia et Salandane, 600 m, fl. ♂, 26.2.1970, P! ; 27383 (type) ; 35825, Pouébo, Mt Mandjélia, 700 m, fr., 6.10.1978, CANB!, P ; 36655, *ibid.*, 750 m, fl. ♀, 6.3.1979, CANB!, P ; 37802, Pouébo, Oumbarinien, 700 m, fl. ♀, 6.2.1980, CANB!, P ; 38007, haute Diahot, Tendé, 800 m, fl. ♂, 28.3.1980, CANB!, P ; 38110, Pouébo, Oumbarinien, 700 m, fr., 13.5.1980, CANB!, P ; McPherson 6058, Mandjélia, 700 m, fr., 26.11.1983, CANB!, P ; Morat 7657, Massif du Tchingou, 850 m, fl. ♂, 13.12.1983, CANB! ; Sévenet & Puset 1536, Mt Panié, 1000 m, fr., 8.9.1978, NOU!

Sarcomelicope pembaiensis T. Hartley, *sp. nov.*

Arbor parva 5-8 m alta ; ramulis novellis glabris, non glaucis ; gemma terminali sparse et minute puberula ; foliis oppositis, 6-14.5 cm longis ; petiolo glabro, non glauco, 1-3 cm longo, basi laminae articulo ; lamina coriacea, glabra, obovato-oblancheolata, 5-11.5 cm longa, 2.5-4.8 cm lata, basi subattenuata, venis primariis utrinsecus costa 8-10, venulis prominentibus, grosse reticulatis, areolis pro parte maxima 1-2 mm latis, apice obtusa, retusa ; racemis fructiferis 2-3 cm longis, axe glabra vel fere glabra, ramis et pedicellis subtiliter pubescentibus, pedicellis 2-3 mm longis ; fructibus luteolis, glabris ; carpellis evolutis 1-4, basilater connatis, divergentibus, infirme suturalibus, indehiscentibus, ovoideis, ca. 1 cm longis, pericarpio in sicco 1-1.5 mm crasso, exocarpio subcoriaceo, mesocarpio spongioso, endocarpio cartilagineo ; seminibus ca. 5.5 mm longis ; testa ca. 0.8 mm crassa ; floribus non visis (sepalis persistentibus glabris, ca. 2.5 mm longis ; petalis persistentibus abaxialiter sparse et minute adpresse pubescentibus, ca. 4 mm longis ; staminibus filamentis persistentibus ciliatis).

TYPE : MacKee 42316, leg. Pusset, Col d'Amieu, Mt Pembai, 750 m, fr., 8.10.1984 (holo-, CANB! ; iso-, P).

Small tree 5-8 m high ; young branchlets glabrous, not glaucous ; terminal bud sparsely and minutely (visible at 15 X) puberulent. Leaves opposite, 6-14.5 cm long ; petiole glabrous, not glaucous, 1-3 cm long, articulated with the blade ; blade coriaceous, glabrous, obovate-oblancheolate, 5-11.5 cm long, 2.5-4.8 cm wide, the base subattenuate, the main veins 8-10 on each side of the midrib, the veinlets prominent, coarsely reticulate, the areolae mostly 1-2 mm wide, the apex obtuse, retuse. Infructescences 2-3 cm long, the axis glabrous or nearly so, the branches and pedicels finely pubescent, the pedicels 2-3 mm long. Fruits yellowish, glabrous ; developed carpels 1-4, basally connate, divergent, weakly sutural, indehiscent, ovoid, ca. 1 cm long, the pericarp drying 1-1.5 mm thick with subcoriaceous exocarp, spongy mesocarp, and cartilaginous endocarp. Seeds about 5.5 mm long ; testa about 0.8 mm thick. Flowers not seen (persistent sepals glabrous, about 2.5 mm long ; persistent petals sparsely and minutely appressed-pubescent abaxially, about 4 mm long ; persistent staminal filaments ciliate). — Pl. 1, 3, 4.

DISTRIBUTION : Known only from Mt Pembai and vicinity. — Map 1.

ECOLOGY : Recorded from rain forest on schistose soil, 750 m alt.

Sarcomelicope pembaiensis is probably most closely related to *S. argyrophylla*, the two having almost identical fruits with basally connate, divergent carpels. It differs from that species mainly in certain features of its terminal bud (sparsely and minutely puberulent as opposed to glabrous except for a tuft of caducous hairs at the apex of each of the young leaves), its leaf blades (obovate-oblancheolate, 2.5-4.8 cm wide as opposed to usually elliptic, 3.5-10.5 cm wide), and its sepals (glabrous as opposed to appressed-pubescent).

MATERIAL STUDIED : MacKee 42316, leg. Pusset (type) ; McPherson 5740, Mt Pembai region, above Col d'Amieu, 750 m, fr., 8.6.1983, CANB!, P.

Sarcomelicope megistophylla T. Hartley, *sp. nov.*

Arbor parva vel mediocris 8-12 m alta ; indumento trichomatibus simplicibus et substellatis ; ramulis novellis dense pubescentibus, non glaucis ; gemma terminali dense pubescenti ; foliis verticilla-

tis (in quoque nodo 4), 17-34 cm longis ; petiolo pubescenti, non glauco, 4.5-9 cm longo, basi laminae articulato ; lamina subcoriacea vel coriacea, subtus pubescenti, elliptica vel elliptico-obovata, 12-25 cm longa, 8.5-14.5 cm lata, basi obtusa vel subrotundata, venis primariis utrinsecus costa 13-16, venulis prominentibus, grosse reticulatis, areolis pro parte maxima 1-2 mm latis, apice brevi-acuminata vel interdum rotundata et retusa vel emarginata ; racemis fructiferis 4-7 cm longis, axe, ramis, et pedicellis sparse pubescentibus, pedicellis obsoletis vel usque 1 mm longis ; fructibus aurantiacis, glabris, valde 4-lobatis et fissuris septicidalibus saltem 1/2 longitudine extensis, ambitu transverse ellipticis, 2-2.5 cm latis, basi impressis, apice impressis vel truncatis, carpellis ca. 1/2 longitudine axialiter connatis, aliter subcontiguis ; pericarpio in sicco 1.5-2 mm crasso, exocarpio subcoriaceo, mesocarpio spongioso, endocarpio cartilagineo ; seminibus 6-6.5 mm longis ; testa ca. 0.5 mm crassa ; floribus maturis non visis (sepalis persistentibus abaxialiter adpresse pubescentibus, ca. 3 mm longis ; petalis persistentibus abaxialiter adpresse pubescentibus, ca. 4 mm longis ; staminibus filamentis persistentibus ciliatis).

TYPE : McPherson 6524, along access road to dam on Néaoua River, S of Houailou, 450 m, fr., 7.5.1984 (holo-, CANB!).

Small to medium tree 8-12 m high ; indumentum of simple and substellate (mostly fascicles of 2-3) trichomes ; young branchlets densely pubescent, not glaucous ; terminal bud densely pubescent. Leaves in whorls of 4, 17-34 cm long ; petiole pubescent, not glaucous, 4.5-9 cm long, articulated with the blade ; blade subcoriaceous to coriaceous, pubescent below, elliptic to elliptic-obovate, 12-25 cm long, 8.5-14.5 cm wide, the base obtuse to subrounded, the main veins 13-16 on each side of the midrib, the veinlets prominent, coarsely reticulate, the areolae mostly 1-2 mm wide, the apex short-acuminate or sometimes rounded and retuse to emarginate. Infructescences 4-7 cm long, the axis, branches, and pedicels sparsely pubescent, the pedicels obsolete to 1 mm long. Fruits orange, glabrous, strongly 4-lobed and with deep septicidal fissures extending from the apex to at least the middle, transversely elliptic in outline, 2-2.5 cm wide, the base impressed, the apex impressed or truncate, the carpels connate axially for about half their length, otherwise subcontiguous ; pericarp drying 1.5-2 mm thick, with subcoriaceous exocarp, spongy mesocarp, and cartilaginous endocarp. Seeds 6-6.5 mm long ; testa about 0.5 mm thick. Mature flowers not seen (persistent sepals appressed-pubescent abaxially, about 3 mm long ; persistent petals appressed-pubescent, about 4 mm long ; persistent staminal filaments ciliate). — Pl. 1, 5, 6.

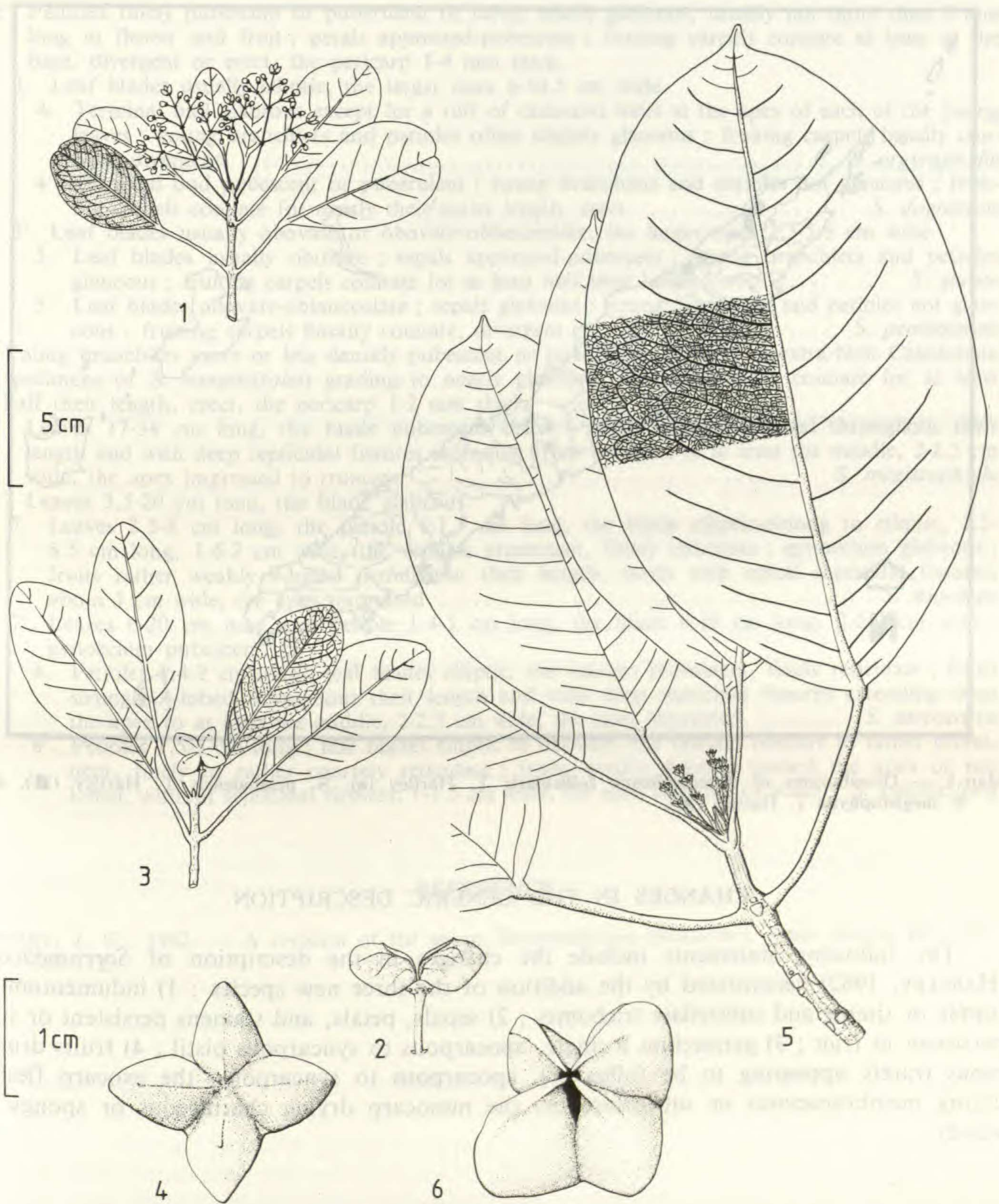
DISTRIBUTION : Known only from the vicinity of Néaoua. — Map 1.

ECOLOGY : Recorded from rain forest at 450 m alt.

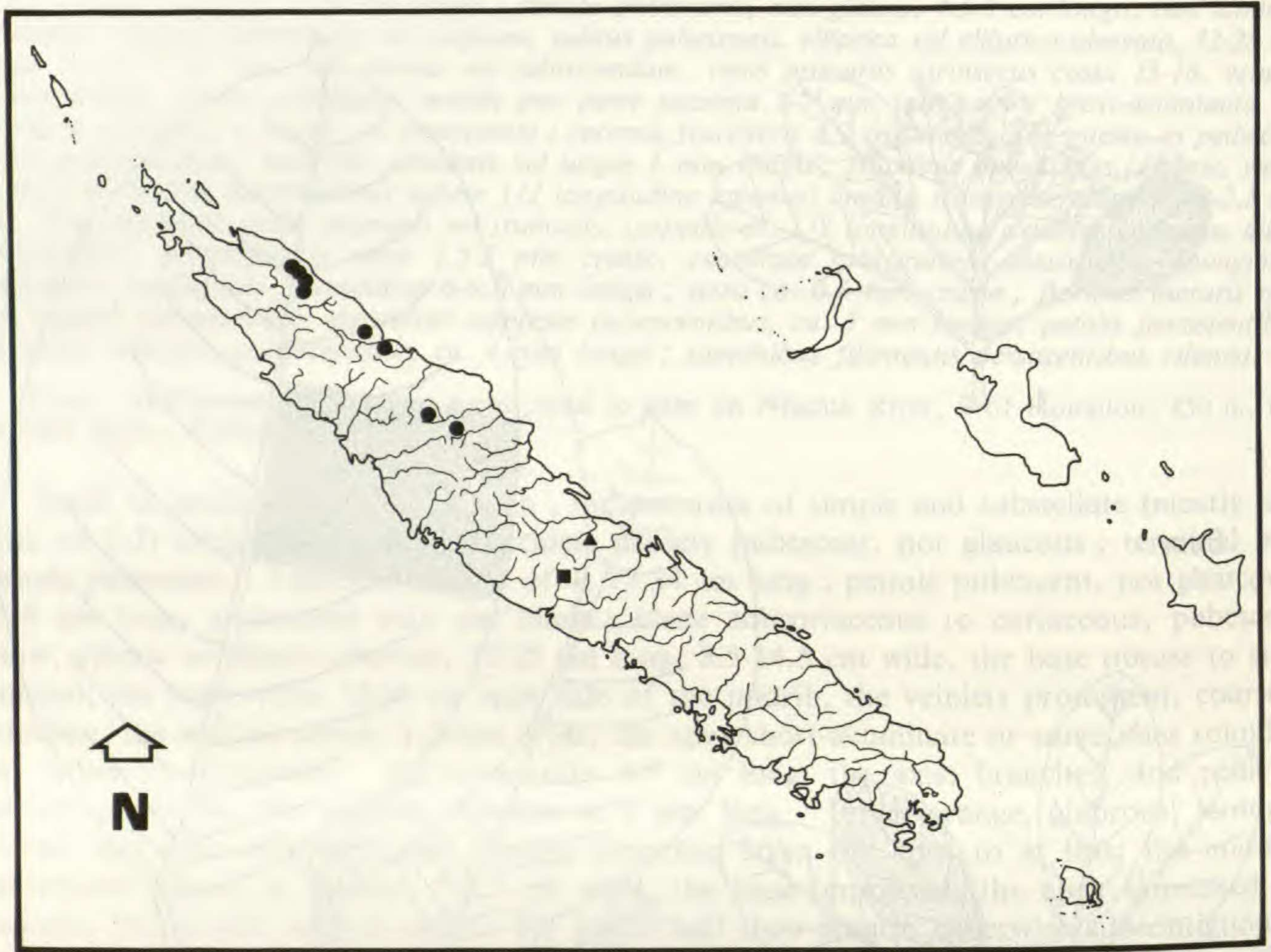
Sarcomelicope megistophylla can be easily recognized by its large (up to 34 cm long), pubescent leaves. In other species of the genus leaves are not known to attain a length of more than 24 cm and although the petiole may be pubescent the blade is invariably glabrous. Also, the indumentum itself is evidently different here. It consists of mixed substellate and simple trichomes whereas elsewhere in the genus only simple trichomes have been observed.

The affinities of *Sarcomelicope megistophylla* are not very clear. On degree of connation of its fruiting carpels it is closest to *S. dogniensis* T. Hartley and *S. sarcococca* (Bailon) Engler.

MATERIAL STUDIED : McPherson 6523, along access road to dam on Néaoua River, S of Houailou, 450 m, young bud, CANB!, P ; 6524 (type) ; Morat 7359, Néaoua, près de l'entrée du tunnel, 450 m, fr., 13.4.1983, CANB!, P.



Pl. 1. — *Sarcomelicope follicularis* T. Hartley : 1, flowering branchlet ; 2, fruit. (1, MacKee 37802 ; 2, MacKee 27383). — *S. pembaiensis* T. Hartley : 3, fruiting branchlet ; 4, fruit. (3, McPherson 5740 ; 4, MacKee 42316 leg. Pusset). — *S. megistophylla* T. Hartley : 5, young flowering branchlet ; 6, fruit. (5, McPherson 6523 ; 6, McPherson 6524).



Map 1. — Distributions of *Sarcomelicope follicularis* T. Hartley (●), *S. pembaiensis* T. Hartley (■), and *S. megistophylla* T. Hartley (▲).

CHANGES IN THE GENERIC DESCRIPTION

The following statements include the changes in the description of *Sarcomelicope* (HARTLEY, 1982) necessitated by the addition of the three new species : 1) indumentum of simple or simple and substellate trichomes ; 2) sepals, petals, and stamens persistent or sub-persistent in fruit ; 3) gynoecium a single, apocarpous to syncarpous pistil ; 4) fruits drupaceous (rarely appearing to be follicular), apocarpous to syncarpous, the exocarp fleshy, drying membranaceous or subcoriaceous, the mesocarp drying chartaceous or spongy to woody.

KEY TO THE SPECIES

1. Young branchlets glabrous or nearly so.
2. Pedicels glabrous, 3-5 mm long (4.5-7 mm long in fruit) ; petals glabrous ; fruiting carpels distinct, divergent, the pericarp about 0.2 mm thick..... *S. follicularis*

- 2'. Pedicels finely pubescent or puberulent or rarely nearly glabrous, usually not more than 3 mm long in flower and fruit ; petals appressed-pubescent ; fruiting carpels connate at least at the base, divergent or erect, the pericarp 1-4 mm thick.
- 3. Leaf blades usually elliptic, the larger ones 6-10.5 cm wide.
 - 4. Terminal bud glabrous except for a tuft of caducous hairs at the apex of each of the young leaves ; young branchlets and petioles often slightly glaucous ; fruiting carpels basally connate, divergent. *S. argyrophylla*
 - 4'. Terminal bud pubescent or puberulent ; young branchlets and petioles not glaucous ; fruiting carpels connate for nearly their entire length, erect. *S. dogniensis*
- 3'. Leaf blades usually obovate or obovate-oblongate, the larger ones 2.5-5.5 cm wide.
 - 5. Leaf blades usually obovate ; sepals appressed-pubescent ; young branchlets and petioles glaucous ; fruiting carpels connate for at least half their length, erect. *S. glauca*
 - 5'. Leaf blades obovate-oblongate ; sepals glabrous ; young branchlets and petioles not glaucous ; fruiting carpels basally connate, divergent. *S. pembaiensis*
- 1'. Young branchlets more or less densely pubescent or puberulent or (only in extra-New Caledonian specimens of *S. simplicifolia*) grading to nearly glabrous ; fruiting carpels connate for at least half their length, erect, the pericarp 1-2 mm thick.
- 6. Leaves 17-34 cm long, the blade pubescent below ; fruits strongly 4-lobed throughout their length and with deep septicial fissures extending from the apex to at least the middle, 2-2.5 cm wide, the apex impressed to truncate. *S. megistophylla*
- 6'. Leaves 3.5-20 cm long, the blade glabrous.
 - 7. Leaves 3.5-8 cm long, the petiole 1-1.5 cm long, the blade elliptic-oblong to elliptic, 2.5-6.5 cm long, 1.6-2 cm wide, the veinlets prominent, finely reticulate ; gynoecium glabrous ; fruits rather weakly 4-lobed throughout their length, rarely with apical septicial fissures, about 1 cm wide, the apex impressed. *S. leiocarpa*
 - 7'. Leaves 6-20 cm long, the petiole 1.4-5 cm long, the blade 6-16 cm long, 2.5-7 cm wide ; gynoecium pubescent.
 - 8. Petioles 1.4-2 cm long ; leaf blades elliptic, the veinlets prominent, finely reticulate ; fruits strongly 4-lobed throughout their length and with deep septicial fissures extending from the apex to at least the middle, 2-2.5 cm wide, the apex impressed. *S. sarcococca*
 - 8'. Petioles 1.5-5 cm long ; leaf blades elliptic to obovate, the veinlets obscure to rather prominent, finely to rather coarsely reticulate ; fruits weakly 4-lobed toward the apex or not lobed, without septicial fissures, 1-1.5 cm wide, the apex rounded to acute. *S. simplicifolia*

REFERENCE

HARTLEY, T. G., 1982. — A revision of the genus *Sarcomelicope* (Rutaceae). *Aust. Journ. Bot.* 30 : 359-372.

